Curriculum Description:

Grade 5 Math – IB Program

Welcome to the Grade 5 Mathematics Curriculum at IW Academy, where students embark on an enriching and interactive journey into the world of numbers, patterns, and logical reasoning. This curriculum is thoughtfully aligned with the International Baccalaureate (IB) Primary Years Program (PYP), designed to foster inquiry-based learning and a deep understanding of mathematical concepts. Our goal is to equip students with the skills and knowledge they need to become confident, independent thinkers and problem solvers, ready to tackle more advanced mathematical challenges in their future academic pursuits.

Engaging and Comprehensive Curriculum

The Grade 5 Mathematics curriculum offers a comprehensive exploration of key mathematical domains, each designed to build a solid foundation for future learning. The curriculum is delivered through a variety of engaging and interactive methods, including e-learning, hands-on activities, collaborative projects, and digital tools, all aimed at making mathematics both enjoyable and meaningful.

Key Areas of Focus

1. Number Theory and Operations:

- Students will deepen their understanding of number theory, focusing on place value, rounding, and estimation. They will also advance their skills in addition, subtraction, multiplication, and division with multi-digit numbers.
- Through inquiry-based activities, students will explore the properties of numbers, develop mental math strategies, and apply their knowledge to real-world scenarios, aligning with the IB's emphasis on conceptual understanding.

2. Fractions, Decimals, and Percentages:

- This section emphasizes mastering the comparison, conversion, and arithmetic operations involving fractions, decimals, and percentages. Students will learn to express and manipulate these numbers in various forms, fostering a comprehensive understanding of their relationships.
- By integrating these concepts into problem-solving tasks, students will see the practical applications of fractions, decimals, and percentages in everyday life, a key aspect of the IB approach to learning.

3. Geometry and Measurement:

- Students will explore the properties of two-dimensional shapes, angles, and the concepts of area and perimeter, as well as an introduction to the volume of solid figures.
- The curriculum encourages students to make connections between geometric concepts and the world around them, promoting spatial reasoning and a deeper understanding of the physical environment.

4. Algebraic Thinking and Expressions:

- Introducing students to the basics of algebra, this component covers variables, expressions, and simple equations. Students will begin to understand how to represent and solve problems using algebraic thinking.
- The inquiry-based approach will help students to recognize patterns and relationships, laying the groundwork for more complex algebraic concepts in the future.

5. Data Handling and Probability:

- Students will learn to interpret, create, and analyze different types of graphs, explore basic probability concepts, and engage in statistical reasoning.
- By involving students in data collection and analysis projects, the curriculum emphasizes the importance of data literacy in the digital age, aligning with the IB's focus on real-world applications.

6. Problem Solving and Critical Thinking:

- Problem-solving is at the heart of the Grade 5 Mathematics curriculum. Students will be challenged to apply the concepts they have learned to solve complex, real-world problems, developing their critical thinking and analytical skills.
- Through collaborative projects and inquiry-based learning, students will enhance their ability to approach problems systematically and creatively, a core objective of the IB PYP.

Innovative Teaching Methods

Our Grade 5 Mathematics Curriculum leverages a blend of traditional and modern teaching strategies to create a dynamic learning environment:

- **E-learning and Digital Tools:** Interactive platforms and digital games make learning math fun and engaging, allowing students to practice and apply their skills in a variety of contexts.

- **Collaborative Learning:** Group activities and projects encourage students to work together, share ideas, and learn from each other, reflecting the IB's emphasis on collaboration and community.
- **Regular Assessments:** Quizzes, tests, and formative assessments provide ongoing opportunities for students to demonstrate their understanding and track their progress.
- **Inquiry-Based Learning:** Students are encouraged to ask questions, explore concepts in depth, and connect their learning to real-world situations, fostering a deeper understanding and appreciation for mathematics.

Learning Outcomes

By the end of the Grade 5 Mathematics course, students will have:

- Developed a strong foundation in number theory, operations, fractions, decimals, geometry, algebra, and data handling.
- Enhanced their problem-solving and critical thinking skills, enabling them to approach mathematical challenges with confidence and creativity.
- Gained a deep understanding of mathematical concepts and their real-world applications, aligning with the IB's commitment to holistic education.
- Cultivated a love for mathematics that will inspire continued learning and curiosity as they move into middle school and beyond.

This Curriculum is designed to be both challenging and rewarding, providing students with the tools and confidence they need to succeed in their future academic endeavors. Let's embark on this exciting mathematical journey together and make learning math a joyful and enriching experience!

The table below clarifies the Curriculum content, the chapters, and the main skills in each chapter:

#	Chapter	Skills
1	Chapter 1: Adding and subtracting numbers	• Reading numbers within millions and writing them in different ways, • finding the place value of a digit in a number in millions; comparing and arranging it, • using the number line and the place value chart to compare numbers, • use signs (> , < , =) to compare numbers, • adding numbers within 7 places, • learning to estimate the result of addition by approximation, • learning the properties of addition (commutative property, associative property, additive identity),

		• subtracting numbers within 7 places, • learning to estimate the result of subtraction by approximation, rounding numbers within 7 places, • identifying the arithmetic rules for even and odd numbers, • identifying the negative number and assigning it to the number line, and • recognizing the inverse of a number
2	Chapter 2: multiplication	• Estimating the results of multiplication using rounding, • multiplying a number by a number from one place, • multiplying numbers ending in zeros, • comparing the results of multiplication, • learning about the properties of multiplication (commutative property, distributive property, additive identity, zero property), • using multiplication to solve life problems, • multiplying a two-digit number by a two-digit number, • using the grid multiplication method to find the result, • multiplying a number of three places by a number of two places, • multiplying three or more numbers with a maximum of two places for each, • multiplying numbers of three places, and • multiplying three numbers up to three place values for each.
3	Chapter 3: Division	• Estimating the result of the division of whole numbers by approximation, • estimating the result of the division of whole numbers by choosing harmonic numbers, • dividing a number of three place values maximum on a one-digit number, • dividing numbers made up of two place values using models, • dividing a number made up of three place values maximum on a number of two place values in different ways, splitting numbers that end in zeros, • finding the result of dividing a whole number of 3 place values or more by a number of two place values, • finding the rest of the division and explaining the meaning of the rest in matters of division, • connecting multiplication with division, and using division to solve life issues

4	Chapter 4: Properties of Numbers	• Finding the divisibility of the numbers 4, 6, 9, • learning about the prime and complex numbers, • analyzing the number into its prime factors using a factor tree and repeated division, • finding the greatest common factor of two numbers, finding the least common multiple of two numbers, • using the greatest common factor and the least common multiple in solving problems, • using exponents to represent repeated multiplication of the same number, • learning to write the number in exponential form, finding the value of the exponent of ten, • finding the exponential form of the number by factoring it into its prime factors, • finding the square of the number and the cube of the number, • finding the square root of the square of the number, finding the cube root for a number cube, and • using the exponents and roots to solve real life problems.
5	Chapter 5: Fractions	• Writing the improper fraction as a mixed number in different ways, • writing the mixed number in the form of an improper fraction in different ways, • finding the equivalent fractions on the number line, • writing equivalent fractions for a fraction, • adding the fractions and mixed numbers using the number line, • adding dissimilar fractions, • adding dissimilar mixed numbers, • using the number line to subtract fractions and mixed numbers, • subtracting a fraction from a whole number, • subtracting a mixed number from a mixed number, • subtracting a mixed number from a whole number, • using the number line to find the result of a whole • number multiplied by a fraction or mixed number, • multiplying a whole number in a fraction in different ways, • multiplying a whole number by a mixed number in different ways,

		• dividing a whole number by a fraction or mixed number, • recognizing the reciprocal of a fraction, dividing a fraction or mixed number by a whole number, and • using fractions to solve life problems.
6	Chapter 6: Decimal Places	• Using forms to express the parts of a thousand, • writing fractions as decimals and representing them, • writing the decimal fraction in standard, • verbal and analytic form, • using decimals to solve life problems, • converting the fraction to a decimal, • converting the mixed number to a decimal, • converting the fraction decimal to a fraction or a mixed number, • comparing fractions and decimals, arranging the fractions and decimal numbers in ascending and descending order, • rounding the decimal numbers to the nearest whole number or to the nearest part of ten, • hundred, or thousand, adding and subtracting the decimal numbers, • estimating the result of adding and subtracting decimals by rounding to the nearest decimal place or whole number, • multiplying decimal numbers by 10, 100, 1000, • multiplying decimal numbers by a whole number, • multiplying two decimal numbers, • estimating the multiplication results of decimal numbers, • dividing decimal numbers by 10, 100, 1000 • dividing integers whose result is a decimal number, • Dividing a decimal number by a decimal number, • estimating the quotient of decimal division, • knowing the percentage, • converting from a fraction or mixed number to a percentage, • finding the number from a percentage.
7	Chapter 7: Data representation and interpretation	• Distinguishing the statistical question, • identifying quantitative and qualitative data, • collecting quantitative and qualitative data and organizing it in a table of signs, • identifying the coordinate plane and its axes,

		• reading points on the coordinate network and representing them, • represent data with lines, then read and interpret them, • representing two data sets with double columns in addition to reading and interpreting them, and • representing two sets of data with double lines and reading and interpreting them.
8	Chapter 8: Equations	• Using models to represent algebraic expressions, • learning about algebraic expressions, writing an algebraic expression using symbols, • learning about substitution, • finding the value of an algebraic expression, using the equations board and algebraic segments to solve equations, • solving addition and subtraction equations, using the algebraic blocks and equations board to solve multiplication and division equations, • writing an equation involving multiplication or division and solving it, and solving problems using a scheme (drawing the model).
9	Chapter 9: Geometry	• Knowing the polygon, • distinguishing the polygon from other geometric shapes, • identifying the regular and irregular polygon, • classifying the triangles according to the lengths of their sides, • identifying the congruent triangles • identifying the different-sided triangles, • classifying their acute angles according to their measures (acute, straight, obtuse), • knowing the properties of quadrilaterals, • distinguishing the special cases of parallelograms, • identifying the common features of the quadrilaterals, knowing the withdrawal, • drawing a picture of a shape after making a withdrawal to it, • knowing the reflection, and drawing the reflection of a shape in the coordinate plane
10	Chapter 10: Measurement	• Knowing the units of complex mass and converting between them, • converting units of measurement for capacity and length,

		• solving problems containing complex units, • calculating time in its different units, • estimating the areas of irregular complex shapes using squares paper, • learning complex shapes, and • calculating the areas and perimeters of complex shapes.
11	Chapter 11: Probabilities and Statistics	• The Arithmetic Mean, Median, and the Mode. • The Range • Probabilities and Applications

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